

WHAT IS CLAIMED IS:

1. A method for enhancing point coordination function in wireless LANs, which is used for a wireless LAN protocol, including contention free period(CFP) and contention period(CP), said method includes following steps:

a. In a contention free period, when a mobile terminal is polled by an access point(AP) and has no data to send, it will adjust its variable to predetermined value;

b. When the data frames are ready for transmission, the mobile terminal starts to detect the share medium, when the share medium is free, the said variable starts to count;

c. If said variable counts to a determined value and the share medium is still free, then the said mobile terminal gains the control of medium and start to send data frame.

2. A method of claim 1 for enhancing point coordination function in wireless LANs, wherein said variable is the network allocation vector(NAV) of the mobile terminal.

3. A method of claim 2 for enhancing point coordination function in wireless LANs, wherein after said station gains the control of medium and starts to send data frame in this CFP, it adjusts its NAV to the maximum value.

4. A method of claim 1 for enhancing point coordination function in wireless LANs, wherein said predetermined value is the value corresponding to the SPIFS.

5. A method of claim 4 for enhancing point coordination function in wireless LANs, wherein the value corresponding to SPIFS is defined between short inter-frame space(SIFS) and PCF inter-frame space (PIFS): $SIFS < SPIFS < PIFS$.

6. A method of claim 5 for enhancing point coordination function in wireless LANs, wherein SPIFS is achieved by the following equation:

$$SPIFS = SIFS + [1slot * Rand()]$$

Where Rand() is a pseudo random number drawn from a uniform distribution over the interval [0,1].

7. A method of claim 1 for enhancing point coordination function in wireless LANs, wherein in step a after the mobile terminal adjusts its variable to a predetermined value, in contention free period, it does not change its NAV even if it receives another beacon frame at the target beacon transmission time(TBTT).

8. A method of claim 1 for enhancing point coordination function in wireless LANs, wherein the point coordinator determines that a number of stations can contend for the control of the shared medium.

9. A method of claim 8 for enhancing point coordination function in wireless LANs, wherein said point coordinator establishes a table, to which

mobile terminals who have no data frame to send in CFP period when the point coordinator is polling are appended in turn.

10. A method of claim 9 for enhancing point coordination function in wireless LANs, wherein the point coordinator limits the number of the stations in the table lower than a predetermined threshold value.

11. A method of claim 10 for enhancing point coordination function in wireless LANs, wherein when the number of the mobile terminals in the table reaches the said threshold, the point coordinator will send a control signal to those who do not respond to the poll of the point coordinator, forbidding them to change said variable.

12. A method of claim 11 for enhancing point coordination function in wireless LANs, wherein in CFP period, if a mobile terminal in the table manages to send data frame by contention, it will be removed from the table.

13. A method of claim 12 for enhancing point coordination function in wireless LANs, wherein in the end of CFP, the variable of the mobile terminal who sent data frame by contention in CFP period is set to a value corresponding to distributed (coordination function) inter-frame space(DIFS) and then contends for the control of the shared medium in the contention period.

14. A method of claim 13 for enhancing point coordination function in wireless LANs, wherein, when the variables of all the mobile terminals are set to the values corresponding to DIFS, if there are still some mobile terminals in the table, then the variables of them are set smaller than those

of the other mobile terminals so as to increase their contention power in contention period.

15. A method of claim 14 for enhancing point coordination function in wireless LANs, wherein in the end of the CFP, the point coordinator clears the table.

16. A method of claim 1 for enhancing point coordination function in wireless LANs, wherein said wireless network protocol is IEEE802.11 protocol.

17. A wireless LAN system with enhanced point coordination function (EPCF), which includes an access point (AP) and several mobile terminals, said mobile terminal also comprises:

A predetermined value setting and adjusting device, which in a contention free period will adjust the variable of a mobile terminal to predetermined value so as to control a counter when said mobile terminal is polled by an access point (AP) and have no data to send;

A counter, when the data frames are ready for transmission, the mobile terminal starts to detect the shared medium, and when the shared medium is free, said counter starts counting;

A device for gaining the control of the shared medium, If the said counter counts to a predetermined value and the shared medium is still free, said device gains the control of the medium and starts to send data frame.

18. A wireless LAN system with enhanced point coordination function of claim 17, wherein said variable is network allocation vector (NAV) of the mobile terminal.

5 19. A wireless LAN system with enhanced point coordination function of claim 18, wherein after said mobile terminal gains the control of medium and starts to send data frame in said CFP, it adjusts its NAV to the maximum value.

10 20. A wireless LAN system with enhanced point coordination function of claim 17, wherein said predetermined value is the value corresponding to the SPIFS.

21. A wireless LAN system with enhanced point coordination function of claim 20, wherein the value corresponding to SPIFS is defined between short inter-frame space(SIFS) and PCF inter-frame space(PIFS): $SIFS < SPIFS < PIFS$.

15 22. A wireless LAN system with enhanced point coordination function of claim 21, wherein SPIFS is achieved by the following equation:

$$SPIFS = SIFS + [1 \text{ slot} * \text{Rand}()]$$

Where Rand() is a pseudo random number drawn from a uniform distribution over the interval [0,1].

20 23. A wireless LAN system with enhanced point coordination function of claim 17, wherein in the contention free period once the predetermined value setting device adjusts said variable to a predetermined value, it does

not change its NAV even if it receives another beacon frame at the target beacon transmission time(TBTT).

24. A wireless LAN system with enhanced point coordination function of claim 17, wherein said point coordinator determines that a certain quantity
5 of mobile terminals can contend for the control of the shared medium.

25. A wireless LAN system with enhanced point coordination function of claim 24, wherein said point coordinator establishes a table, to which the mobile terminals who have no data frame to send in CFP when the point coordinator is polling are appended in turn.

10 26. A wireless LAN system with enhanced point coordination function of claim 25, wherein the point coordinator limits the number of the mobile terminals in the table lower than a predetermined threshold value.

15 27. A wireless LAN system with enhanced point coordination function of claim 26, wherein said access point includes a control signal sending device, when the number of the station in the table reaches said threshold , the point coordinator will send a control signal to other mobile terminals who do not respond to the poll of the point coordinator, forbidding them to change said variable.

20 28. A wireless LAN system with enhanced point coordination function of claim 27, wherein in the end of CFP, the variable of the mobile terminal who sent data frame by contention in CFP period is set to a value corresponding to distributed coordination function inter-frame space(DIFS).

29. A wireless LAN system with enhanced point coordination function of claim 28, wherein when the variables of all the mobile terminals are set to the values corresponding to DIFS, if there are still mobile terminals in the table, then their variables are set smaller than those of the other mobile terminals so as to increase their contention power in contention period.

30. A wireless LAN system with enhanced point coordination function of claim 29, wherein in the end of the CFP, the point coordinator clears the table.

31. A wireless LAN system with enhanced point coordination function of claim 17, wherein said wireless network protocol is IEEE802.11 protocol.